

What is claimed:

1. A stator for use in a permanent magnet machine, the stator comprising:

a frame having an outer peripheral edge and an inner peripheral edge extending about a central axis;

a plurality of stator teeth extending from the frame's inner peripheral edge toward the central axis; and

at least one permanent magnet located entirely within one of the stator teeth.

2. The stator of claim 1 wherein the stator includes a plurality of permanent magnets, and wherein each permanent magnet is located entirely within one of the stator teeth.

3. The stator of claim 2 wherein the stator teeth each have one of the permanent magnets located entirely therein.

4. The stator of claim 3 wherein the permanent magnets in adjacent ones of the stator teeth alternate between having inwardly facing north poles and inwardly facing south poles.

5. The stator of claim 2 wherein only every other one of the stator teeth have one of the permanent magnets located therein.

6. The stator of claim 5 wherein the permanent magnets in every other one of the stator teeth have inwardly facing north poles.

7. The stator of claim 6 wherein the permanent magnets and the stator teeth each have a width extending in a direction of rotation of a rotor when the rotor is mounted for rotation about the central axis, and wherein the widths of the permanent magnets are greater than the widths of the stator teeth.

8. A permanent magnet machine comprising the stator of claim 1 and a rotor mounted for rotation about the central

axis, the rotor including a plurality of rotor teeth extending outwardly relative to the central axis.

9. The permanent magnet machine of claim 8 wherein the stator includes twelve stator teeth, and wherein the rotor includes eight rotor teeth.

10. A stator for use in a permanent magnet machine, the stator comprising:

a frame having an outer peripheral edge and an inner peripheral edge extending about a central axis;

a plurality of permanent magnets;

a first plurality of stator teeth extending from the frame's inner peripheral edge toward the central axis, each of the first plurality of stator teeth having one of the permanent magnets located at least partly therein; and

a second plurality of stator teeth extending from the frame's inner peripheral edge toward the central axis, the second plurality of stator teeth each having no permanent magnets located at least partly therein.

11. The stator of claim 10 wherein the first plurality of stator teeth each have one of the permanent magnets located entirely therein.

12. The stator of claim 10 wherein the first plurality of stator teeth are each positioned directly between two of the second plurality of stator teeth.

13. The stator of claim 10 wherein the permanent magnets have inwardly facing north poles.

14. The stator of claim 10 wherein the first plurality is equal in number to the second plurality.

15. The stator of claim 10 wherein the permanent magnets and the first plurality of stator teeth each have a width, and wherein the widths of the permanent magnets are greater than the widths of the first plurality of stator teeth.

16. The stator of claim 10 wherein each of the first plurality of stator teeth have a first profile, and wherein each of the second plurality of stator teeth have a second profile different than the first profile.

17. The stator of claim 16 wherein the first and second profiles each include end regions facing the central axis, and wherein the second profile's end regions taper inwardly towards said inner peripheral edge to a greater extent than the first profile's end regions.

18. A permanent magnet machine comprising the stator of claim 10.

19. A stator for use in a permanent magnet machine, the stator comprising:

a frame having an outer peripheral edge and an inner peripheral edge extending about a central axis;

a plurality of permanent magnets each having inwardly facing north poles;

a first plurality of stator teeth extending from the stator frame's inner peripheral edge toward the central axis, each of the first plurality of stator teeth having one of the permanent magnets located entirely therein; and

a second plurality of stator teeth extending from the frame's inner peripheral edge toward the central axis, the second plurality of stator teeth each having no permanent magnets located therein;

wherein the first plurality of stator teeth are each positioned directly between two of the second plurality of stator teeth.

20. A permanent magnet machine comprising the stator of claim 19 and a rotor mounted for rotation about the central axis, wherein the stator includes twelve stator teeth, and wherein the rotor includes eight rotor teeth.